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DISCOVERIES AND IMPROVEMENTS IN ARTS MANUFACTURES, &c.

Patent of Mr. John Barton of Argyle-street, London, for a Lamp on a new construction, in which a constant supply of oil is produced by the hydrostatic action of a heavier fluid.

MR. BARTON'S lamp consists of two principal parts, one of which contains the heavier fluid, and the other the oil. The first (as represented in the figure which accompanies the specification) is in the figure of a pillar resting on a pedestal, supporting an urn on its top. The part which contains the oil is contained within this, chiefly in the pedestal, and consists of a vessel about a fourth of its height and nearly of the same diameter, from which a small tube rises through the pillar and urn to the top, where it diverges into three, or more branches, each furnished with a burner. The whole moves freely up and down in the pillar and pedestal, and has attached to it two floats, one in the pedestal and the other in the urn, formed either of cork, wood, or vessels impervious to air, which sustain it, so that about a tenth of its length may rise above the surface of the water (or other fluid heavier than oil) with which the pillar, &c. is filled. The bottom of the oil vessel is made to take off like a snuff-box lid, and in its center a small

hole, about a tenth of an inch in diameter is made to admit the water as the oil is consumed; the water-holder is made to take asunder at the top of the pedestal, by a water tight screw joint, and also at the top of the urn, in order to admit the oil vessel.

When the oil reservoir is inclosed in the outer vessel, and the joints are all secured, the latter is filled with water up to the bottom of the urn, (which is to contain about as much as the reservoir) the oil is then poured in gently through the tube, till it rises to within about an inch of the top, after which the branch containing the burners, is screwed on, the wick is put in, and the whole is then ready for use.

As the oil is poured in, the water will be driven out from the reservoir through the small tube at its bottom, and will rise in the urn, till it forms an equilibrium with the oil. On the contrary, as the oil is consumed by the flame, the water will run into the reservoir to supply its place, and in proportion as its level becomes lower from this cause in the urn, the burners will sink down along with the reservoir and floats so as still to preserve the same distance between them and the oil in the tube.

The burners for this lamp are of a peculiar construction; each of them is formed with a small concave dish attached to it, at not more than one half of its diameter below its superior extremity, and which projects from it an equal space. The use of this dish is to catch the small quantity of oil which exudes from the wick, and besides preventing the unpleasant effect which results from the flowing of the oil down the sides of the burner, applies the oil (which would otherwise be wasted) to the purpose of more copiously supplying the combustion of the wick. It will generally be found when the wick has been properly applied, and this part of the burner has been well constructed, that the oil which exudes from the wick, and flows into this concave dish, will rise with a convex surface till its upper part come into contact with the wick over the edge of the burner, by which means the brilliancy of the light is considerably augmented. In order however that no part of the oil which exudes from the wick during its combustion may be wasted, another concave dish is attached to the burner, below the first, but about one third larger; and holes are made in the burner where the upper surface of the lower dish touches it, both to let the oil that is caught by this dish flow back in the wick, and to admit the air to come in contact with it; a certain portion of which will rise along with the oil, and assist in promoting the combustion.

*Remark....*Lamps have often before been constructed in which the oil has been made to rise to a certain level by the pressure of water, or mercury, so as to supply the combustion more equally; and a plan for this purpose may be seen so far back as the works of Hero Alexandrinus, where we find it under the following title in the latin version of his Pneumatica. *Lucernæ constructio, ut si oleum diminutum sit, in accensione lucernæ aqua infusa, lucerna oleo repletur.*

The novelty of Mr. Barton's lamp does not therefore consist in this circumstance, but in having the oil vessel floating in water, which as far as we know is an original invention. But it

does not appear that any great benefit can arise from it; for the common fountain lamps answer sufficiently well, for the usual purposes where they are wanted; and for domestic use, as a substitute for candles (for which from the figure given of Mr. Barton's lamp, it would seem that it was principally intended) It can never come in competition with Argand's lamps, in any respect whatsoever.

Patent of the Rev. Mr. Edward Manley of Uffculm, Devon, for a Plough.
Dated May, 1809.

The frame of this plough consists of a beam, like that of a common plough, with two side pieces attached to its near end, and diverging from it in an angle of about 45° which are connected together by a cross piece behind, that forms a triangle with them: from the cross piece, two handles rise of the usual form.

This frame carries three cultivators, or instruments for working the ground; one of which is fixed to the beam in the front of the triangle, and the other two behind at the extremities of the side pieces. Of these cultivators three different sets are provided for the plough; one of the first kind resembles a coulter, with a sharp point, having two wings projecting horizontally from it at an angle of about 45°. The second set are the same as the first, except that they are of a smaller size. One of the third set differs from the first only in having a single or double broad plate, like a mould-broad, fixed behind the coulter. To the above implement a roller, and a harrow brush (formed of branches pressed together in a frame and pointed downwards) are occasionally annexed.

The first set of cultivators, when attached to the frame, and set shallow in the ground, will either scarify, or *spine*; and when set deep they will draw themselves into the ground, working it up and pulverising it to a great depth. The second set are used for the purpose of working the ground finer. The third are employed for turning the ground over in single or double ridges. Mr. Manley names this implement the *Expedition Plough*.